

Claims

We claim:

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1. A computer network scanning system for fulfilling a scan order over a computer network, said system comprising:

5 at least one computer terminal adapted to receive input for creating the scan order;

at least one order entry server computer configured to create and distribute scan orders, each order entry server computer coupled to at least one terminal through the computer network; and

10 at least one scanner node, each scanner node coupled to each order entry server computer through the computer network, each scanner node configured to process scan orders sent to the scanner node.

2. The computer network scanning system of claim 1 further comprising a central database coupled via the computer network to each scanner node and to each terminal, the central database adapted to store and retrieve scan orders.

15 3. The computer network scanning system of claim 1 wherein each terminal has associated therewith browser software for inputting scan orders.

4. The computer network scanning system of claim 1 wherein each order entry server computer comprises:

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a user interface module coupled to the computer network and adapted to receive scanner settings and parameters for the scan order from the terminal(s);

a scanner directory service module coupled to the user interface module and configured to provide a capability profile for each scanner node on the computer network;

5 a scan order reconciler module coupled to the scanner directory service module and to the user interface module and adapted to receive scanner settings and parameters for the scan order inputted through the user interface module, the scan order reconciler module configured to compare a capability profile for a scanner node with the inputted scanner settings and parameters for consistency and to provide notification through the user interface module of
10 any inconsistencies;

a script writer module coupled to and adapted to receive input from the scan order reconciler module and configured to create the scan order by translating scanner settings and parameters inputted from the terminal through the user interface module into a script that can be parsed by the scanner nodes; and

15 an email server module adapted to receive the scan order from the script writer module and configured to send electronic mail messages to any address designated in the scan order and to send the scan order to any scanner node on the computer network.

5. The computer network scanning system of claim 4 wherein the scanner directory service module is a module selected from the group comprising (A) a database
20 containing a capability profile for each scanner node on the computer network, the database populated by entering a capability profile for each scanner node before using the database, and

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(B) a directory of capability profiles for the scanner nodes on the computer network generated on demand by a lookup/discovery software module.

6. The computer network scanning system of claim 1 wherein each scanner node comprises:

5 a user interface module;

a script interpreter module for parsing the scan order in order to obtain scanner settings and parameters contained therein, the script interpreter module coupled to the user interface module;

10 a scan order queue updater and sorter module coupled to the user interface module and to the script interpreter module, the scan order queue updater and sorter module configured to update and sort a queue of a scanner node;

a scanner driver module adapted to receive an output of the script interpreter module and to set settings and parameters of the scanner node based on the output;

15 a scanner module coupled to the scanner driver module and adapted to receive scanner settings and parameters from the scanner driver module and configured to produce a scanned image; and

20 an email server module coupled to the computer network, to the script interpreter module, and to the scanner module, the email server module configured to receive the scan order sent over the computer network, to send an electronic mail message containing the scanned image to any recipients indicated in the scan order, and to send an electronic mail message

without the scanned image to any parties indicated in the scan order notifying such parties of the completion of the scan order.

7. A computer network scanning method for fulfilling a scan order over a computer network having at least one scanner node, said method comprising:

5 creating the scan order at a local computer terminal, wherein the scan order includes an identification of an item to be scanned and an address of at least one of the individuals selected from the group comprising (A) recipients of the scanned document, and (B) recipients of notification of completion of the scan order;

submitting the scan order to at least one scanner node for processing;

10 processing the scan order at the scanner node; and

updating the scanner node(s) on the computer network.

8. The computer network scanning method of claim 7 wherein the step of creating the scan order comprises the substeps of:

15 accessing from an order entry server computer a user interface module which permits input of the scan order from the terminal;

inputting from the terminal a desired set of scanner settings and parameters through the user interface module;

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reconciling the inputted scanner settings and parameters with a capability profile associated with each scanner node designated in the scan order; and

converting the reconciled scanner settings and parameters into the scan order using a script writer module associated with the order entry server computer.

5 9. The method of claim 8 wherein the step of accessing comprises using Web browser software to retrieve a Web page, the Web page adapted to receive input concerning scanner settings and parameters.

10 10. The method of claim 8 wherein the step of reconciling comprises the substeps of:

10 (a) retrieving from a scanner directory service module the capability profile for each of the scanner nodes in the designated scan order;

(b) comparing the retrieved capability profiles of the scanner nodes with the scan order; and

15 (c) when the scan order is inconsistent with a retrieved capability profile of a scanner node:

(I) providing notification of the inconsistency through the user interface; and

20 (II) executing one step selected from the group comprising (A) the selection of an alternative scanner node and repeating steps (a) through (c) above, and (B) the acceptance of the scanner node with the associated capability profile.

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11. The method of claim 7 wherein the step of submitting uses electronic mail.

12. The method of claim 7 wherein the step of processing comprises the substeps of:

invoking a scanning mode at the scanner node where the scan order is received;

5 parsing the scan order using a script interpreter module associated with the scanner node;

updating a queue of scan orders at the scanner node using a process which eliminates from the queue all scan orders that are time-expired or count-expired;

10 prioritizing all scan orders in the updated queue according to a predetermined algorithm; and

listing the prioritized scan orders.

13. The method of claim 12 wherein the step of updating a queue of scanner orders at a scanner node comprises the substeps of:

(a) determining whether the scan order has time-expired;

15 (b) when time-expired, removing the scan order from the queue;

(c) when not time-expired, determining whether the scan order has count-expired;

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(d) when count-expired, removing the scan order from the queue;

(e) when not count-expired, determining whether there is a count reduction notification associated with such scan order; and

(f) when there is a count reduction notification, reduce count order associated
5 with the scan order and repeat steps (a) through (f) above.

14. The method of claim 12 wherein the predetermined algorithm is an algorithm selected from the group comprising (A) first-in first-out, (B) alphabetical, and (C) requestor-specified priority level.

15. The method of claim 7 wherein the step of processing comprises the
10 substeps of:

selecting one of the scan orders in the queue of the scanner node;

obtaining an item to be scanned as specified in the scan order;

setting the scanner node to desired settings and parameters as specified in the scan
order;

15 placing the item to be scanned in the scanner node;

initiating scanning;

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sending a scanned image as specified in the scan order using an email server module associated with the scanner node; and

sending notification using the email server module associated with the scanner node of completion of the scan order to any parties indicated in the scan order.

5 16. The method of claim 15 wherein the step of setting the scanner node comprises the substeps of:

parsing the scan order using the script interpreter module associated with the scanner node; and

10 sending commands to a scanner driver module associated with the scanner node based upon information obtained from the parsed scan order.

17. The method of claim 7 wherein the step of updating the scanner node(s) on the computer network comprises the substeps of:

requesting count reduction of the scan order when count is greater than one, and requesting removal of the scan order from the queue of the scanner node when count equals one;

15 determining whether the scan order has been sent to any other scanner node(s) in the computer network; and

when the scan order has been sent to other scanner node(s) on the computer network, sending an electronic mail message using the email server module from the scanner node which processed the scan order to each other scanner node, requesting (A) count reduction

of the scan order when count is greater than one, and (B) removal of the scan order from the queue of each other scanner node when count equals one.

18. The computer network scanning system of claim 1 wherein each order entry server computer comprises:

5 a user interface module coupled to the computer network and adapted to receive scanner settings and parameters for the scan order from the terminal(s);

a scanner directory service module coupled to the user interface module and configured to provide a capability profile for each scanner node on the computer network;

10 a scan order reconciler module coupled to the scanner directory service module and the user interface module and adapted to receive scanner settings and parameters for the scan order inputted through the user interface module, the scan order reconciler module configured to compare a capability profile for a scanner node with the inputted scanner settings and parameters for consistency and to provide notification through the user interface module of any inconsistencies;

15 a script writer module coupled to and adapted to receive input from the scan order reconciler module and configured to create the scan order by translating scanner settings and parameters inputted from the terminal through the user interface module into a script that can be parsed by the scanner nodes; and

20 a central database coupled to the script writer module and to the computer network, the central database accessible over the computer network by all scanner nodes and

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terminals on the computer network, the central database adapted to store and retrieve scan orders generated by the script writer module.

19. The computer network scanning system of claim 18 further comprising an email server module coupled to the computer network and to the central database and configured to send electronic mail messages to any address designated in the scan order.

20. The computer network scanning system of claim 1 wherein each scanner node comprises:

a user interface module;

a script interpreter module for parsing the scan order in order to obtain scanner settings and parameters contained therein;

a scan order retrieval, queue updater and sorter module coupled to the computer network, to the user interface module, and to the script interpreter module, the scan order retrieval, queue updater and sorter module configured to retrieve scan orders from a central database and to update and sort retrieved scan orders in a queue in a scanner node;

a scanner driver module coupled to the script interpreter module, the scanner driver module adapted to receive an output of the script interpreter module and to set settings and parameters of the scanner node based on the output;

a scanner module coupled to the scanner driver module and adapted to receive scanner settings and parameters from the scanner driver module and configured to produce a scanned image; and

an email server module coupled to the computer network and to the scanner module, the email server module configured to receive the scanned image from the scanner module, to send an electronic mail message containing the scanned image to any recipients indicated in the scan order, and to send an electronic mail message without the scanned image to
5 any parties indicated in the scan order notifying such parties of the completion of the scan order.

21. A computer network scanning method for fulfilling a scan order over a computer network having at least one scanner node, said method comprising:

creating the scan order at a local computer terminal, wherein the scan order
10 includes an identification of an item to be scanned and an address of at least one individual selected from the group comprising (A) recipients of the scanned document, and (B) recipients of notification of completion of the scan order;

storing the scan order in a central database;

retrieving the scan order for a scanner node;

15 processing the retrieved scan order at the scanner node designated in the scan order; and

updating the central database.

22. The method of claim 21 wherein the step of updating the central database comprises deleting the scan order from the central database.

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23. An electronically-readable medium storing a computer program for permitting a computer to perform a method comprising the steps of:

creating a scan order;

submitting the scan order for processing to scanner nodes on a computer network;

5 processing the scan order at the scanner nodes; and

updating the scanner node(s) on the computer network.

24. An electronically-readable medium storing a computer program for permitting a computer to perform a method comprising the steps of:

creating a scan order;

10 storing the scan order in a central database;

retrieving the scan order from the central database for processing at the scanner nodes designated in the scan order; and

updating the central database upon completion of the scan order.

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